Claims

[c1] A method for rapid analysis of a compound comprising the steps of:
establishing a spectral signature ratio for at least one predetermined substance, the signature having a first intensity at a first wavelength relative to a second intensity at a second wavelength;
applying pulsed laser energy to the compound whereby plasma is produced;
obtaining the spectral intensity of the plasma at the first and second wavelengths;
and calculating the ratio of the spectral intensity at the first wavelength by the spectral intensity at the second wavelength whereby the presence or absence of the substance may be resolved.

[c2] The method of claim 1 wherein the compound is analyzed substantially in real-time while in transit.

[c3] The method of claim 2 wherein the compound moves upon a conveyor belt.

[c4] The method of claim 1 further comprising the steps of: providing a computational processor; providing a radiation detector adapted to obtain the spectral intensity of the plasma; providing a database of spectral signatures for at least one substance; providing an output means communicatively coupled to the processor; communicatively coupling the radiation detector to the processor; communicatively coupling the processor to the database wherein the spectral intensity is obtained by the radiation detector and measured values for the first and second wavelengths are passed onto the processor which calculates and compares the ratio to the database of spectral signatures and communicates the results to the output means.

[c5] The method of claim 1 further comprising the step of time-gating the step of obtaining of the spectral intensity of the plasma.

[c6] The method of claim 1 wherein the compound is a mined ore.

[c7] The method of claim 1 wherein the compound is ingestible matter.